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ABSTRACT

Presenting a prospectus for a community environmental education program designed to accommodate 30 senior high school students, this document includes: a description of the course; course rationale; goals; objectives; an operational plan; a course projection schedule; a semester calendar; an orientation trip; an environmental concepts instruction period (life science center section, environmental research station section, and urban systems section); an on-going, in-program evaluation; an urban eco-assault project; a 1-semester course operational summary (chart); and the proposed budget for the 1973-74 academic year. The course is described as a semester long experience concerned with real life involvement outside the classroom employing an interdisciplinary approach to environmental education that focuses on scientific methods and materials, urban issues, exposure to careers and job responsibilities, decision making, problem solving, and leadership. A final intensive period of the course is described as the "Urban Eco-Assault" project; wherein, students find a local environmental issue that involves professional contacts, institutions, and local citizens, allows for cooperation in terms of data-gathering, and culminates in a conference that illustrates the various parties investigated and their different views. Study goals, sessions, areas, and methods are presented in outline form. (JC)

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Jefferson Union High School District
Science Department
Jefferson High School
1973-1974 School Year

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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Community Environmental Education Program

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COMMUNITY ENVIRONMENTAL EDUCATION PROGRAM

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COMMUNITY ENVIRONMENTAL EDUCATION PROGRAM (cont'd)

BRIEF DESCRIPTION OF COURSE:

The Jefferson Environmental Education course will be a full-time, semester long experience (elective) for 30 students (11th and 12th grade students) concerned with providing opportunities to learn through real life involvement outside of the classroom. This course creates the most ideal inter-disciplinary approach to environmental education. The experience will focus on scientific methods and materials, urban issues, exposure to careers and job responsibilities, decision making, problem solving, and leadership.

All of this will funnel through a final intensive period called the "Urban Eco-Assault" project. Here the students will find a local environmental issue that involves professional contacts, institutions, local citizens, and allows for cooperation in terms of data-gathering and fact finding. The students will divide up and work with various individual elements that are involved with the particular issue.

After this involvement the students will return to set up a conference and then represent the various parties they have worked with showing the different sides of the problems.

This course will then concern itself with a one-week evaluation session, the outcome of which will be available to all concerned; students, teachers, administrators, board members, and members of the community.

RATIONALE FOR COURSE:

Intelligent, aware decision making is becoming an increasingly difficult task in our society. Before one can examine or evaluate the many options presented by modern life, the options themselves must be discovered and identified. Educational institutions are now grappling with the problem of offering their students a comprehensive view of society so that the students can make intelligent decisions about their participation in that society.

However, society itself is constantly changing, and the skills or information required to function effectively within society are also changing. Teaching students specific facts about their environment or offering them vocational counseling based on those facts is not totally effective in helping the student to cope with his world. His world is in a state of flux, and the student should ideally be adequately prepared to react to the changes he can realistically be expected to confront in his environment in the future. The opportunity to learn from his community is presented in this course.

RATIONALE (continued):

The Jefferson Community Environmental Education Course aims at offering the student experiential education in a variety of societal structures so that he may develop the ability to operate consciously and effectively in life. The course is a full time, one semester educational alternative for high school juniors and seniors.

Rather than teach students in a didactic manner, offering them specified responses to static situations, the course can offer students decision making skills so that they may identify a situation, analyze it, and act within it. This lends the student flexibility when encountering change, and increased mobility within his immediate environment.

GOALS

1. To educate students through participation in real-life projects, thus offering the subjects of English, Social Studies, Mathematics, Science, Business, Biology, Homemaking, Shop and Physical Education through involvement in the Life Science Center, the Environmental Field Station, the Urban Awareness Phase, and an Eco-Assault Project.

2. To make the student, the school, and members of the community ecologically aware and literate.

3. To teach the process of making better decisions by studying and solving "real" problems in the real world.

4. To learn the skills of organization by working with other students, citizens, and teachers in the implementation and the administration of the various activities in the course.

5. To prepare the students to be intelligent, functioning citizens by offering the opportunity for individual growth and attention.

OBJECTIVES

1. The active implementation of the Community Eco-Assault Projects, the Life Science Center, and the Environmental Research Station, the Urban Awareness Phase, resulting in:

   a. initiative and leadership development of student.
   b. development of student-school-community relations.
   c. knowledge and learning for students, school and community.
   d. school and community resources examined and utilized.

OBJECTIVES (continued):

2. The active administration of the total program by the students with the teachers and administration for educational benefits.
   a. Organizational skills of student developed.
   b. Problem solving skills taught.
   c. Student and school relations developed.

3. To offer the materials that have been developed in the two-year pilot program in an economically practical course to the students of Jefferson High School.

(The Goals and Objectives are the true rationale for the existence of the Environmental Education course).

OPERATIONAL PLAN:

1. Orientation Trip (3 weeks)
   This phase allows one week for students to orient themselves and prepare for a two-week trip to a California wilderness area. This entire period provides a solid foundation for decision making, development of personal and local resources, exposure to natural systems and group work skills.

2. Environmental Concepts Instruction Period (9 weeks)
   During this time, students will be rotating through the three project areas: The Life Sciences section, the Environmental Research section and the Urban Systems section. Involvement in these sections will provide them with basic instruction and first-hand experience in dealing with the following concepts: the biological and ecological aspects of life processes and life-support systems, the interpretation and management of natural resources, the relationship of science and technology and scientific systems, study of urban decision making processes, and the urban eco-system.

3. Urban Eco-Assault (5 weeks)
   The emphasis will be on finding an environmental issue in which various aspects of the problem are approachable in terms of human contact, factual accessibility, and cooperation between students, people and institutions involved. The second part of the eco-assault will be a data gathering period in which students work with those individuals and institutions who are playing a role in the problem. The third part is concerned with setting up a conference with students who will represent the different sides of the selected problem and the concerned parties they have been working with.

4. In-Program Evaluation (1 week)
   The final week of the semester is spent evaluating the program. This is a period to tie together the wide-ranging experiences of students and staff, and to put the semester in perspective. Evaluation materials developed during the pilot project period will be used. Outcomes will be recorded and distributed.

COURSE PROJECT SCHEDULE

September 10, 1973	Semester 1 begins (30 students).
September 29, 1973	Orientation trip completed.
November 28, 1973	Environmental Concepts Period completed.
January 18, 1974	Eco-Assault Project.
January 25, 1974	Semester ends. In-Program Evaluation completed.
January 28, 1974	Semester 2 begins (30 students).
February 22, 1974	Orientation trip completed.
April 25, 1974	Environmental Concepts Period completed.
June 7, 1974	Eco-Assault Project.
June 14, 1974	Semester ends. In-Program Evaluation completed.

SEMESTER CALENDAR

1. Orientation Trip-- 3 weeks.

2. Environmental Concepts Instruction Period

   Life Science Center - 3 weeks
   Research Station - 3 weeks
   Urban Systems - 3 weeks

3. Eco-Assault Project - 5 weeks

4. Evaluation - 1 week

COMMUNITY ENVIRONMENTAL EDUCATION PROGRAM

THE ORIENTATION TRIP

This experience is designed to bring the students together at the immediate start of each semester. The trip is totally planned and organized by the new group. The numerous logistical tasks are defined and then divided. All are involved in an intensive problem-solving process. This is a period of one full week. Research and reporting become the catalysts to successful and productive communication. The following two weeks involve two intensive weeks on the trip itself.

This intense introduction sets the stage for the mode of operation throughout the entire semester's program. Problem solving process, research, and reporting result in an experience where group interaction offers self worth and individual responsibility. This is the vital element of success in this experiential program.

The trip takes place in National Forests, Wilderness Preserves, and various rural environments of California. The students begin to live, work and travel together. Backpacking through the wilderness, the group soon realizes it has to mold itself into a unit capable of coping with natural obstacles, human variables, and individual needs. The unexpected must always be confronted and dealt with.

Certain basic exercises - first aid, rope work, map and compass instruction, rock climbing and rapelling, search and rescue problems, ecology instruction, backpacking skills, survival techniques, problem solving sessions -- accentuate the total group experience and bring to the forefront the need for trust, cooperation, sharing, knowledgeable group decisions, and personal initiative.

All in all the experience deals with simplistic realities in a natural environment. Through providing initial stimulus and orientation to experiential education, the lessons learned in the natural environment are carried home and transferred to the remaining phases of the semester-long course.

ENVIRONMENTAL CONCEPTS INSTRUCTION PERIOD

This part of the program, commencing upon the school's return from the orientation trip, will take nine weeks. During this time, students will be rotating through the three project areas:

Life Sciences Center
Environmental Research Station
Urban System section

Involvement in these sections will provide them with basic instruction and first hand experience in dealing with the following environmental concepts: the biological and ecological aspects of life processes and life support systems, the interpretation and management of natural resources, the relationships of science and technology to the natural environment, studies in alternative technological and scientific systems, study of urban decision-making processes and the urban eco-system.

The Environmental Concepts Instruction Period will bring students in contact with ordinary citizens and decision makers, scientific instruments, plant life, animal life, solar stills, wind generators, and alternative housing, plus public and private environmental agencies. The impact will be mainly realized, however, in the Urban Eco-Assault Project. This Environmental Concepts Instruction Period is simply designed to prepare students with the skills, concepts, and tools necessary for their participation in the Urban Eco-Assault Project.

THE LIFE SCIENCE CENTER SECTION

I. TIME - 3 weeks

II. STUDENTS - 30 per session

III. SESSIONS - one

IV. STUDY GOALS OF LIFE SCIENCE CENTER SECTION

A. Augment basic instruction in the biological and the ecological aspects of "Life Processes".

B. Examination and participation in selected activities, research topics, laboratory and field studies dealing with local examples of "Life-Support" systems.

C. Interpret the use and management of natural resources in terms of human responsibility.

V. STUDY AREAS

A. Soil

1. Soil Composition (Physical, Chemical, Living and Non-living.)
2. Soil Formation (Biogeochemical Cycles).
3. Soil Management (improving and restoring, testing, fertilizing, protecting, use and misuse).

B. Soil Study Methods

1. Investigations
   a. Tracing the water retention in soils.
   b. Soil analysis using PH, chemical indicators.
   c. Soil erosion demonstration (types and causes).
2. Field Studies
   a. Profile study of local road-cut (soil texture).
   b. Analysis of mineral contents of local soil from samples of local plant parts.
   c. Growing different plants on different local soils.
3. Research Topics
   a. Functions and projects of local soil conservation districts.
   b. Role of fertilizers in local agriculture.
   c. Landscape planning according to soil types in local area.

V. STUDY AREAS

C. Water
1. Physiological Life requirements.
2. Current consumption (needs, wants and uses).
3. Problems of pollution and supply.
4. Industrial vs. human use and management.

D. Water Study Methods

1. Investigations
   a. Soil-water relationships (sedimentation, percolation, solubility, compaction).
   b. Osmosis.
   c. Hydraulic action of water.
   d. Various methods of desalination.
   e. Filtration and water quality.
2. Field Studies
   a. Visit to flood, erosion and pollution sites.
   b. Visit sewage treatment plant.
   c. Study local water supply system.
   d. Study of local water habitats.
   e. Study of local sources of pollution.
   f. Pollution tolerance of organisms.
3. Research Topics
   a. Water legislation and management agencies.
   b. Industrial uses of water.
   c. Water table variations.
   d. Reclamation and fill problems.
   e. Regional water development plans.

E. Air
1. Chemical composition.
2. Physiological importance.
3. Current pollution problems (effects)
4. Air pollution control agencies and legislation.

F. Air Study Methods'
1. Investigations
   a. Amount of dust and other particles in the air.
   b. Demonstration of thermal inversions.
   c. Tests of radioactivity and chemicals in the air.
   d. Contribution of combustion processes to pollution.
   e. Effects of pollution on plants and animals.
2. Field Studies
   a. Visit to smog control station.
   b. Daily observation, with recording and charting, of smog levels.
3. Research Topics
   a. Correlation of smog occurrence with weather records.
   b. Local and statewide atmospheric and topographic conditions relating to smog occurrence.
   c. Local history of illness and death related to smog.
   d. Use of possible non-polluting energy sources.

V. Study Areas (continued)

G. Animal Science
1. Consumers - harmful and beneficial.
2. Decomposers - harmful and beneficial.
3. Life Cycles
   a. Growth
   b. Reproduction
   c. Natural history
4. Ecological Significance.
5. Economical importance and management.
   a. Agricultural.
   b. Industrial.
   c. Recreational.

H. Animal Science Study Methods
1. Investigations
   a. Collect and identify local insects.
   b. Interrelationships of producers and consumers.
   c. Care and use of small animals.
2. Field Studies
   a. Raise rabbits with 4-H guidelines.
   b. Improve habitats for beneficial animals.
   c. Ecological reconnaissance of local native animals.
3. Research Topics
   a. Agricultural significance of birds.
   b. Ways to control animal pests.
   c. Analysis of local "food chains" and "Pyramids".
   d. Fish and wildlife agencies.

I. Plant Science
1. Photosynthesis
2. Respiration
3. Reproduction
4. Growth factors
5. Plant characteristics
6. Ecological significance
7. Economical importance and management
   a. Agricultural
   b. Industrial
   c. Horticultural
   d. Recreational

J. Plant Science Study Methods
1. Investigations
   a. Water loss by plants and water intake.
   b. Transport of phosphates in plants.
   c. Plant anatomy - structures and growth.
   d. Plant physiology - O_2 production and light, CO_2 consumption, transpiration.

V. STUDY AREAS (continued)

J. Plant Science Study Methods (continued)

2. Field Studies
   a. Germination of seeds in varying conditions.
   b. Photoperiodic control of plant behavior.
   c. Visit commercial nursery, tree surgeon.
   d. Raising a garden, greenhouse work.
3. Research Topics
   a. Food production in green plants.
   b. Photosynthetic reserves.
   c. Agricultural importance of legumes.
   d. Urban trees: selection, maintenance and value.

ENVIRONMENTAL RESEARCH STATION

I. TIME - 3 weeks

II. STUDENTS - 30 per session

III. SESSIONS - one

IV. STUDY GOALS OF ENVIRONMENTAL RESEARCH STATION SECTION

A. Study relationship of science and technology to natural environment (man's impact on nature).
B. Examination and participation in selected activities, research projects, lab and field studies dealing with alternative technological and scientific systems.
C. Study and interpretation of select terrestrial and marine environments in relation to human responsibility/activity in these ecosystems.

V. STUDY METHODS

A. Inclusion of modern research techniques in initial investigative aspects of the curriculum.

B. Use of problem solving skills and experimental techniques in selected field studies, research topics and investigations.

C. Accurate and scientific reporting of all secured information by use of all recording tools, as well as the sharing and the recording of the final results.

VI. NATURAL SYSTEMS STUDIES

A. Anatomy of an Ecosystem (Terrestrial and Marine at Field Station)
1. Living components
2. Non-living components
3. Energy needs
4. Limiting factors

B. Terrestrial Ecosystem Investigation (Environmental Field Station)
1. Mapping primary producers - transects and random samples
2. Mapping primary consumers - " " " "
3. Identification of decomposers - " " " "
4. Productivity analysis - " " " "

VI. NATURAL SYSTEMS STUDIES (continued)

C. Marine Ecosystem Investigation (Environmental Field Station)
1. Mapping primary producers - transects and random samples
2. Mapping primary consumers - " " " "
3. Identification of decomposers - " " " "
4. Productivity analysis - " " " "

D. Effects of Man on the Terrestrial and Marine Ecosystems
1. Mass production (man and natural resources)
   a. Resource use and misuse - world supply investigation.
   b. Advertising and mass communication - positive and negative impacts.
   c. Recycling and industry - contemporary practices.
   d. The consumer - statistical exploration of citizen consumption.
   e. Investigation of mass plans regrading alternatives.
2. Energy and the natural environment
   a. Major energy sources for man's activities.
   b. Contemporary energy consumption.
   c. Current (world wide) energy reserves.
   d. Alternative power sources and conservation plans.
3. Transportation and the natural environment.
   a. Impact of the internal combustion engine.
   b. 1. Land - highway systems
      2. Rail
      3. Sea
      4. Air - noise, pollution, land use
   c. Mass transit examination - effects and value
   d. Rapid transportation and consumption on natural resources.
   e. Alternative modes of transportation.
4. Modern housing and the natural environment.
   a. Basis of modern design and architecture.
   b. Modern building materials and their natural origins.
   c. Housing land use and misuse (past and present).
   d. Zoning and codes.
   e. Housing and tract design as a reflection of current American values.
   f. Alternative housing and landscaping.

THE URBAN SYSTEMS SECTION

I. TIME - 3 weeks

II. STUDENTS - 30 per session

III. SESSIONS - one

IV. STUDY GOALS OF URBAN SYSTEMS SECTION

A. Study of the city as an integration of diverse political, social, and economic power groups.
B. Study how urban systems with their diverse group needs drastically affect the natural environment.
C. Study how urban systems directly affect living and work patterns, human relationships, and political alliances.
D. Study how urban systems tend to concentrate greater and greater power and responsibility into fewer and fewer hands.

V. STUDY METHODS

All students will be given instruction in research techniques, problem solving skills and accurate reporting (written, audio, video). Students will be expected to use these skills in the following phases of the program:

A. Independent Research Projects
B. Individual and Group Interviews
C. Field Studies
D. Definition of Community Problems and Solutions
E. Group meetings
F. Dissemination of Results of Individual and Group Projects

VI. STUDY AREAS

A. Political
   1. A study of how municipal government is organized.
   2. Which segments of the community is it most responsive to? Least responsive to ? Why?
   3. What part does the bureaucracy play?
   4. Who in the city holds overt power? Who holds covert power? Who do they represent?

B. Political Study Methods
   1. Investigations
      a. Determine the formal power structure of the city.
      b. Determine the informal power structure of the city.
      c. Determine those groups within the city that seem to hold most sway with municipal government - those with the least sway.

VI. STUDY AREAS (continued):

B. Political Study Methods (continued):
   2. Field Studies
      a. Urban trips to map first hand the various public agencies - their purpose, location and effectiveness.
      b. Interviews with agenc workers and clients to determine community attitudes towards city services.
      c. Videotape the operations of a selected agency to capture its operation and attendant problems.
   3. Research Topics
      a. What major revisions have been made in city government structure within the last ten years? Why were they made? Who was responsible for the change? Who benefited?
      b. How has the city responded to air pollution? Sewage treatment? Freeway construction? Highrise? Which groups in the city supported or opposed these issues? Why? What were the outcomes of each? How were they arrived at?

C. Social
   1. Which social and ethnic groups make up the city?
   2. Where are they located? What are their particular cultural and economic concerns?
   3. Are they organized for political action? What political power do they have? What is it based on?

D. Social Study Methods
   1. Investigations
      a. List and chart on a map the location within the city of the various social and ethnic groups.
      b. Determine how each group or section is organized for political action. Try to assess what their power, if any, is based on.
   2. Field Studies
      a. Select two diverse sections of the city and survey ten residents of each. Determine their views toward welfare, property tax, highrise construction, cost of labor, open space, and urban renewal. Compare results. What conclusions can you draw?
      b. Visit central police. Based on their statistical information, what are the most common crimes? Who commits them? In what sections of the city do they occur? Do the same for rape, fraud, and assault.
   3. Research Topics
      a. Select a four block area in each of two diverse sections of the city. Using the latest census report, and comparing it with one 20 years ago, give a profile of the areas of social change.

Urban Systems Section (continued)

STUDY AREAS (continued):

E. Economic
   1. What are the major economic forces in the city? Where are they concentrated?
   2. What are the economic sector's major concerns? What aspects of the city operation do they attempt to influence or control?
   3. Are there any major political or social alliances between social or ethnic groups built on common economic concerns?
   4. What is the percentage of business' economic contributions to the city compared with individual wage earners and property owners?

F. Economic Study Methods
   1. Investigations
      a. Determine, List and Locate on a map which are the major economic powers in your community.
      b. Are all the major forces of one type (manufacturing, tourism, shipping, etc.) or are they diverse?
      c. Determine if they are organized for political action. If so, how?
      d. Do they have lobbies or act through informal channels?
   2. Field Studies
      a. Choose five major corporations and five major unions. Draw up a list of the top five executive officers of each. Determine which civic or charitable organizations they belong to. Can you discern any pattern?
      b. Determine what each of these officers feels are the five most important issues in the community at the present time and the position his union or corporation takes on them.
   3. Research Topics
      a. Using information from the assessors office, attempt to find out who pays the largest part of the tax burden- business or individual property owners?
      b. On the issues of freeway construction, crime, and taxation, what has been the position of business, labor, and property owners? Are there inconsistencies? What conclusions can you draw?

G. The Problem Oriented City
   1. What does the city see as its major problem areas?
   2. What agencies has it set up to deal with these problems? Are they adequately equipped for the task? Do some get more than others?
   3. What part does the private sector play in the attempted solutions to these problems beyond the normal tax contribution?
   4. Which groups within the city are involved with which problems?
   5. Are solutions generally arrived at by compromise in the open or on a power basis behind the scenes?

H. The Problem Oriented City Study Methods - Through Conference

Full Day discussion and sharing of interviews, surveys and video-tape dealing with the above topics.

ONGOING IN-PROGRAM EVALUATION

The final week of each semester will be spent evaluating the impact of the previous seventeen weeks. Since the whole program of study is basically task and project oriented, in which performance, approach, committment and responsibility are major factors, the final evaluation is a typing-up of achievements and growth that have occurred between student and staff in the course of the semester.

Students evaluate their own performance in light of the goals which they established for themselves at the beginning of the semester, their performance on individual and group projects, and whether or not the program satisfied their needs. Again, this evaluation does not come with sudden abruptness. It is a finalization of what has been continuing every day between students and teachers throughout the semester. The evaluation usually operates through large and small group sessions and journal writings (each student keeps a journal throughout the semester.) Meetings are facilitated by staff members and are aimed at building rather than tearing down. Final testing is also administered during this evaluation. Results are recorded and made available for examination.

URBAN ECO-ASSAULT PROJECT

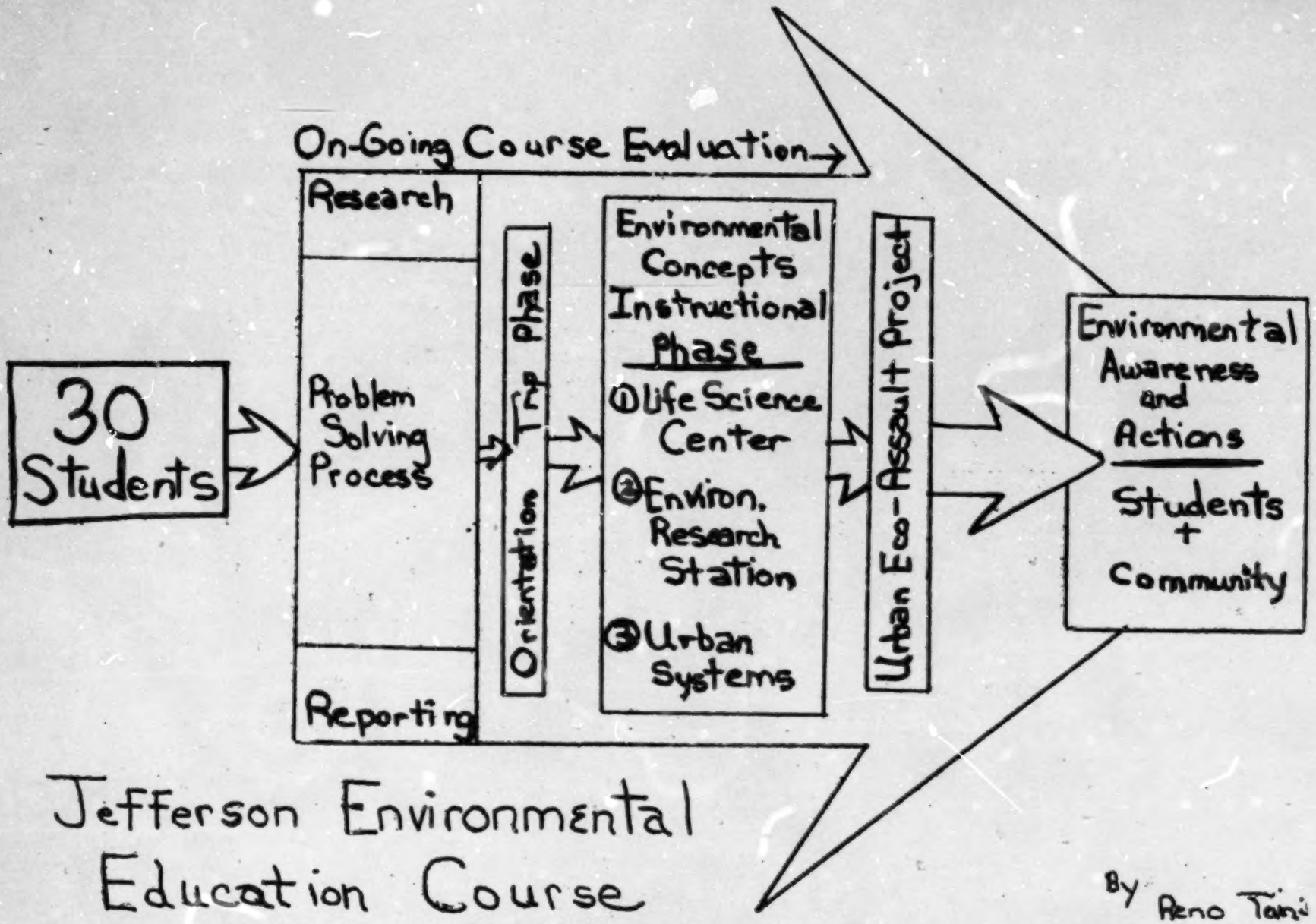
The Urban Eco-Assault will consist of one five-week project per semester.

DAYS 1-6: Each project will focus around a community issue which is first identified, then researched by students, working with the staff in an advisory capacity. The emphasis will be on finding an environmental issue in which various aspects of the problem are approachable in terms of human contact, factual accessibility, and cooperation between students, people, and the institutions involved. The first six days of the Eco-Assault will focus on research and problem definition, to give students a clear handle on the complexities of the problem they are attacking. The boundaries will be defined and examined.

DAYS 7-15: The second phase of the Eco-Assault will be a data gathering period in which students will work with those individuals and institutions who are playing a role in the problem. Students will spend two weeks in this data gathering phase - obtaining a holistic view of the problem, learning about the world of work and interest groups, seeing how problems are solved and decisions made and filtering all of this through what they have learned in the Environmental Concepts Instructional Phase.

DAYS 15-21: The third phase of the Eco-Assault is concerned with setting up a conference with the students who represent the different sides of the problem and the concerned parties they have been working with. The design of the conference will be done by the students, but will likely conform to the structure of a problem-solving session, with facilitator, recorder, and explicit group memory. The conference will be a sort of roundhouse in which both students and the groups/individuals they have worked with will have a chance to share opinions and view the attitudes and real concerns of all sides. The preparation of the conference and its execution will take four days (three for preparation, one for the conference.)

DAYS 21-25: The fourth phase of the Eco-Assault will involve students in self-evaluation and designing a report of their research and conference proceedings. The objective of the Urban Eco-Assault is to involve students in the community, and the community in the school. It is designed to present students with the complexities of environmental problems, illustrating the need to look beyond simplistic answers and the importance of generating alternative solutions. It is the opportunity to synthesize the learning received during the Environmental Concepts period.



Jefferson Environmental Education Course

One Semester Operational Summary

By Reno Taini

JEFFERSON HIGH SCHOOL

Science Department

COMMUNITY ENVIRONMENTAL EDUCATION COURSE
1973-1974 Proposed Budget

I. FORMULA:

Number of students per semester	30
Number of Periods per day (full time)	5
Cost per student contact per year	$2.50
TOTAL COST: 30 students X 5 periods/day X 2 semesters X $2.50=	$750.00

II. BUDGET BREAKDOWN:

A. INSTRUCTIONAL SUPPLIES	
1. Urban System	$50.00
2. Life Science Center	$150.00
3. Environmental Research Station	$100.00
	$300.00
B. TRANSPORTATION	
1. Public (30 days/yr. X 25 students at $.10 day)	$75.00
2. Vehicles (Gas and Maintenance)	$150.00
	$225.00
C. MISCELLANEOUS	
1. Equipment Maintenance and Purchase	$100.00
2. Office Supplies	$25.00
3. Telephones (10 months X $10.00/mo.)	$100.00
	$225.00
TOTAL:	$750.00